ผลงานด้านวิชาการและการวิจัย

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1. เรื่อง Incidence and Associated Factors of COVID-19 Infection among Newborns: A Cross-Sectional Study in Thailand (อุบัติการณ์และปัจจัยเสี่ยงของการติดเชื้อโควิด-19 ในกลุ่มทารกแรกเกิด: การศึกษาแบบภาคตัดขวางในประเทศไทย)

2. ชื่อ-นามสกุล นางเบญจวรรณ อิ้งทม **ตำแหน่ง** นักวิชาการสาธารณสุขปฏิบัติการ

3. ชื่อหน่วยงาน กองอนามัยมารดาและทารก

4. หลักการและเหตุผล

COVID-19, caused by the SARS-CoV-2 virus, is a highly infectious disease affecting humans and animals, primarily targeting the respiratory and digestive systems. The virus spreads through respiratory droplets and contact with contaminated surfaces. Pregnant women and newborns were one of the most vulnerable populations with heightened susceptibility to severe illness and mortality from COVID-19. While pregnancy can compromise the mother's immune system, leading to changes in lymphocyte count and increased inflammation-related cytokines, COVID-19 may additionally affect multiple organ systems of women during pregnancy, including the respiratory and cardiovascular systems, blood coagulation, immune response, and placental function.

In newborns, COVID-19 infection can present with a range of symptoms. Common symptoms include fever, respiratory distress, cough, nasal congestion, and gastrointestinal symptoms such as diarrhea and vomiting. Since neonatal symptoms can sometimes be nonspecific and may overlap with other neonatal conditions, it is challenging to solely rely on a clinical presentation for diagnosing COVID-19 in this population. Timely and accurate laboratory testing, such as reverse transcription-polymerase chain reaction (RT-PCR), is crucial for the diagnosis of COVID-19 in newborns.

Literature showed that COVID-19 infection is linked to several maternal and fetal complications, such as miscarriage, stillbirth, preterm birth, and intrauterine growth restriction. A significant proportion of infants born to COVID-19-positive mothers have required treatment in the Neonatal Intensive Care Unit. Vertical transmission of COVID-19 from mothers to neonates is documented, especially in the third trimester, but rare from available limited data. Evidence suggested that mothers with severe symptoms, including pneumonia and respiratory distress, have been associated with a higher likelihood of mother-newborn transmission, the late third-trimester infection has been associated with an increased risk of vertical transmission and the

gestational age at COVID-19 infection and delivery mode may influence the risk of mother-newborn transmission.

However, the mode of delivery, whether vaginal or caesarean delivery and breastfeeding have been topics of investigation and concerns regarding the risk of mother-newborn transmission. Although existing evidence suggests that the risk of viral transmission through breastfeeding is low, precautions such as mask-wearing, hand hygiene, and avoiding coughing or sneezing near the infant have been recommended and applied.

In Thailand, the COVID-19 outbreak has significant impact on the whole country, in terms of, disease control measures, daily lifestyle change, and access to healthcare services, with a considerable number of 4,752,422 confirmed cases and 34,371 deaths from COVID-19 as of July 17, 2023. Pregnant women and infants in Thailand were endangered by the risk of infection, the control measures, and barriers to utilizing maternity services during the pandemic. To the best of our knowledge, no study reported on the COVID-19 situation in neonates in Thailand.

Therefore, this study aimed to investigate the incidence of mother-newborn COVID-19 transmission in Thailand and its association with maternal and newborn characteristics. Understanding these is essential for developing effective strategies to mitigate the risks associated with COVID-19 infection during pregnancy and infancy in Thailand.

5. วัตถุประสงค์

This study aimed to identify the incidence and associated factors of newborn COVID-19 infection. Understanding these would benefit in developing effective strategies to mitigate the risks associated with COVID-19 infection during pregnancy and infancy.

6. วิธีการ/ขั้นตอนการดำเนินงานตามกระบวนการ

This cross-sectional quantitative study utilized data from a country-wide reporting system of pregnant and postpartum women infected with COVID-19 and their newborns in Thailand. The study included 6,048 newborns born to infected mothers from December 2020 to May 2022. The outcome was the incidence of newborns infected with COVID-19. The exposure factors were mothers' characteristics including age, nationality, vaccination status, gestational age at infection detection and at delivery, the severity of COVID-19 infection, delivery mode, and newborns' characteristics including birth weight, mother-newborn separation after birth, and infant feeding. Multivariable logistic regression was used to examine associations between characteristics and newborn COVID-19 infection.

7. สรุปและข้อเสนอแนะ

The proportion of newborns infected with COVID-19 was relatively low (6.4%). Maternal age was associated with infection risk, with newborns of mothers aged 20-34 years (adjusted odds ratio: AOR = 0.60, 95%CI: 0.43-0.81) and ≥ 35 years (AOR = 0.64, 95%CI: 0.44-0.93) having a lower likelihood of infection compared to the youngest age group. Newborns of mothers known of infection during postpartum had a higher likelihood of infection (AOR = 3.75, 95% CI: 2.16-6.51). The severity of COVID-19 infection in mothers was inversely associated with newborn infection risk (AOR = 0.67, 95% CI: 0.47-0.96). Term newborns had a lower likelihood of being infected with COVID-19 (AOR = 0.49, 95% CI: 0.29-0.84) compared to preterm newborns. Complete separation of mother and newborn after birth was associated with the lowest likelihood of infection (AOR = 0.18, 95% CI: 0.11-0.30). Newborns who were fed breastmilk substitutes, or a combination of substitutes and maternal milk had a higher likelihood of infection (AOR = 4.16, 95% CI: 2.32-7.45) compared to those directly breastfed or fed with expressed breastmilk.

This study contributes to the understanding of newborn COVID-19 infection and its risk factors in Thailand. The relatively low proportion of infected newborns and the identified factors provide guidance for preventive measures and optimizing care during the pandemic. Continued research is needed to further explore these factors and address knowledge gaps for effective prevention and management strategies.

8. ช่องทางการเผยแพร่

วารสารวิจัยระบบสาธารณสุข ปีที่ 17 ฉบับที่ 4 ตุลาคม-ธันวาคม 2566

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